

608 SIDEWALK AND DRIVEWAY

608.01 PORTLAND CEMENT CONCRETE SIDEWALK AND DRIVEWAY

(A) DESCRIPTION. Portland cement concrete sidewalk and driveway shall be composed of Portland cement concrete proportioned, mixed, and constructed on the prepared soils base in accordance with these specifications, in one course, to a depth specified in the contract documents. Except as herein stated, all requirements specified in 501 are applicable to this specification.

(B) COMPOSITION. The proportions of materials for concrete shall meet the requirements of 817 for Class F PCC.

The concrete for sidewalks shall be darkened by incorporating in the mix at the batch plant, a carbon powder, meeting requirements of 814.06(A), at the rate of 1/3 of a pound per sack of cement.

It may be necessary to vary the above amounts of carbon powder to match existing portland cement concrete. Under no circumstances however, shall the quantities be increased such that the resulting reduction in strength exceeds 5 percent when tested in accordance with AASHTO T 106.

Care shall be taken to see that the portland cement concrete is uniformly darkened and if necessary, additional mixing may be required.

(C) CONSTRUCTION REQUIREMENTS.

(1) PLACING CONCRETE. Concrete sidewalk and driveway shall be placed on a base course constructed as specified in Table 203.03. The concrete shall be placed for the full width of the sidewalk and driveway. It shall be thoroughly spaded along the edges and shall be tamped to eliminate voids and bring sufficient mortar to the top of the forms by use of metal shod templates.

When a concrete sidewalk abuts other structures, the area of the structure against which the sidewalk concrete is placed shall be given a heavy coating of bituminous material meeting the requirements of 802.03 or 802.04. When a sidewalk is constructed between an adjoining permanent structure on one side and a curbing, either stone or concrete on the other, one-half inch thick expansion joint material having a recovery of 90 percent or more shall be installed adjacent to the curbing. When a concrete driveway abuts a concrete pavement and/or sidewalk the same type of expansion material shall be installed. No separate payment will be made for expansion joint material. It will be included in the payment of the appropriate PCC item.

Every effort shall be made to safeguard trees. If it becomes necessary to trim tree roots, the Contractor must notify the Engineer prior to trimming. The Contractor will then carry out his trimming operation under the supervision of the District's Trees and Landscaping Division.

The nature and extent of tree root removal in connection with sidewalk construction will be determined prior to work scheduling. Minor root removal and the forming and construction of tree boxes around existing and/or proposed tree locations shall be included in the contract price for PCC Sidewalk.

(2) PLACING REINFORCEMENT. Wire fabric reinforcement will not be required in portland cement concrete sidewalk. However, wire fabric reinforcement of not smaller than No. 20 wire, spaced at one inch, shall be placed around manhole frames and other types of structures extending through the full depth of the sidewalk. The material shall be cut approximately 6 feet square with a hole of the proper diameter cut in the center. The reinforcement shall be placed one inch below the surface of the sidewalk. Wire fabric reinforcement weighing 50 pounds per 100 square feet shall be placed in driveways.

(3) FORMING JOINTS.

(a) TRANSVERSE JOINTS.

(1.) Transverse Expansion Joints - Transverse expansion joints shall be installed at intervals of approximately 48 feet and shall be provided with a means for load transfer. The expansion joint filler shall be of the preformed type, 1/2 inch in thickness and conform to the requirements of 807.01(A). The filler for this work shall have a recovery of not less than 90 percent and shall be installed flush with the finished surface of the sidewalk.

Where sidewalks intersect, transverse expansion joints shall be placed in each sidewalk for its full width near the intersections of the back lines of the sidewalks or as directed by the Engineer. Where cement concrete leads abut the curb, expansion joint filler must be placed at the back of the curb.

(2.) Transverse Contraction Joints - Transverse contraction joints shall be constructed as weakened plane joints at approximately 12 foot intervals as described in paragraph (6) below.

(b) LONGITUDINAL JOINTS. Longitudinal joints will not be required in this work.

(4) LOAD TRANSFER ASSEMBLY. Transverse expansion joints shall be provided with means for transfer of load across the joint by use of dowels or other approved methods. The assembly shall meet the requirements of 807.03 except that the assembly shall be fabricated from 3/8 inch rods, the dowel bars shall be 1/2 inch in diameter and shall be spaced at approximately 2 foot intervals but not closer than one foot to the edge of the sidewalk.

The assembly shall be installed in a manner conforming to the requirements of 501.14(E).

(5) SEALING OF JOINTS. Joints with a preformed joint filler shall be sealed with a sealant conforming to 807.02(A)(1). The preformed filler shall be removed to 1/2 inch below the top of sidewalk and this space sealed.

(6) FINISHING. After the surface has been struck off and screeded to the proper elevation, it shall be given a smooth finish, free from depressions or irregularities of any kind. In no case shall dry cement or a mixture of dry cement and sand be sprinkled on the surface to absorb moisture or hasten hardening. The surface shall be marked into 3 foot squares, or as directed, by forming longitudinal and transverse grooves 1/2 inch in depth with a jointing tool having a blade projection of 1/2 inch. At intervals of 12 feet, or as directed, the transverse groove shall be made 1/3 the depth of the sidewalk to form a transverse contraction joint. When this groove is formed with a jointing tool, the blade projection shall be not less than 1/3 the depth of the sidewalk; if a bar or plate is used, it shall be tapered from top to bottom so that it may be easily removed without damage to the sidewalk.

After final finishing, the sidewalk surface shall be lightly broomed with a hair broom meeting the requirements of 905.09(D)(2).

(D) TREE SPACES. That area, either continuous or interrupted, between the curb and the sidewalk shall be defined as a tree space. The edges of the sidewalk around these spaces shall present clear, vertical faces true to line. The spaces shall be filled to the level of the sidewalk with topsoil meeting the requirements of 822.01. Payment for the topsoil will be made under a separate item. The minimum size of the tree space shall be 4 feet wide, measured from the front face of the curb, by 9 feet long unless otherwise directed by the Engineer.

(E) EXPOSED AGGREGATE SIDEWALK. The exposed aggregate sidewalk shall be constructed

in one course to the thickness specified. Carbon powder will not be used in the PCC slab unless otherwise specified. Reinforcement or load transfer devices will not be required unless otherwise specified.

Coarse aggregate for concrete slab mix shall be the same as that used for the seeding. Select aggregate for exposed aggregate seeding shall be washed No. 67 rounded (not crushed) gravel free from deleterious materials such as iron oxides and iron pyrites. The aggregate shall be washed dust-free in a wheel barrow or other suitable container. Select aggregate samples shall be submitted to the Engineer for approval. Aggregate source, cement type, and cement brand shall not be altered during the course of the work.

Exposed aggregate sidewalk construction shall be in accordance with the following:

1. The Contractor will construct a 4 foot by 4 foot horizontal sample test panel using the same material and methods that he intends to use in this construction. Work shall not proceed until the sample has been approved by the Engineer. The approved sample panel shall be kept at the job site until the work is finished. Extreme care must be maintained by the Contractor to properly arrange his work and to employ only masons skilled in this class of work in order that the finished surface shall conform to the approved sample.

2. The PCC slab shall be constructed on the prepared soils base. Immediately after the slab has been placed, screeded, floated, or darbied, the unsegregated seeding aggregate shall be hand-scattered over the slab so that approximately 50 of the 1/2 inch to 1 inch stones occupy each square foot (smaller stones scattered are not counted). The seed aggregate shall be in a damp condition when placed on the surface of the slab. The aggregate shall be embedded initially by tapping with a wood float, a straight edge or a darby, and finally by using a bull float, or hand float until the appearance of the surface is similar to that of a normal slab after floating. Care shall be taken not to overdo floating so as not to depress the aggregate too deeply.

3. Approximately 30 minutes after final troweling, the surface shall be uniformly sprayed with an approved retarder, covered with a plastic sheet and let set for 10 to 20 hours.

4. Ten to 20 hours after the application of the retarder, scrub out cement with a coarse water spray and a fiber brush until the larger stones are well exposed. Care must be taken not to dislodge the aggregate as patching will not be permitted. The use of a steel brush will be permitted only in spots where surface shows excessive sand. When the brushing is completed the entire surface shall be carefully swept clean with fiber brushes to remove the excess mortar, which shall be removed from the site of the work.

5. The surface shall be covered and cured for seven days in accordance with 501.17.

6. After curing, the surface shall be scrubbed with a 10 percent solution of muriatic acid and water. The entire surface shall then be washed thoroughly with water.

(F) COMPLETION OF WORK. Before acceptance, the work shall be cleaned up and all debris and unused material removed. Any defective sections shall be replaced or repaired immediately by the Contractor at his own expense. All work hereunder must be completed within 1 week after the construction of the sidewalk is completed.

(G) MEASURE AND PAYMENT.

(1) The unit of measure for Portland Cement Concrete Sidewalk, Exposed Aggregate Sidewalk and Exposed Aggregate Sidewalk Repair will be the square yard. The actual number of accepted square yards, 4 inches in depth, complete in place, measured along the sidewalk surface will be paid for at the appropriate contract unit price per square yard, which payment will be full compensation for furnishing, hauling, and placing all materials, including joints, load transfer devices, expansion joint materials, and

reinforcement, for the removal and disposal of all existing sidewalk and curing; and for furnishing all equipment, tools, labor, and incidentals necessary to complete the work.

(2) The unit of measure for Portland Cement Concrete Driveway will be the square yard. The actual number of square yards, of the depth specified, measured complete in place will be paid for at the contract unit price per square yard, which payment will be full compensation for furnishing, hauling, and placing all materials including expansion joint filler, waterproofing, impervious materials, wire fabric reinforcement, curing, and for furnishing all equipment, tools, labor, and incidentals necessary to complete the work.

608.02 PORTLAND CEMENT CONCRETE SIDEWALK REPAIR AND MISCELLANEOUS CONSTRUCTION

(A) **DESCRIPTION.** Repairs to PCC sidewalk and miscellaneous construction shall consist of the cutting out, removal and disposal of the old material from defective areas and replacing with portland cement concrete to a depth equal to that of the surrounding concrete, or as directed by the Engineer. Materials and methods meeting, insofar as practicable, the requirements specified for new construction of similar type shall be used.

This work shall include also the replacing, in a manner described above, of cuts or openings for underground work.

(B) **MATERIALS.** The materials shall meet the requirements of 501.02.

(C) **COMPOSITION.** The proportions of materials for concrete shall meet the requirements of 817.03 for Class F PCC.

(D) **CONSISTENCY.** The consistency of the concrete shall be as specified in 501.15.

(E) **CONSTRUCTION REQUIREMENTS.** Portland cement concrete repair shall conform to the requirements of these specifications for new construction of a type similar to that on which the repairs are to be made, with the following exceptions, changes, or additions:

(1) **PREPARATION FOR CONCRETE REPAIRS.** The defective areas to be repaired shall be prepared by removing all defective materials as directed by the Engineer. This area shall be graded to depth necessary to construct the repair so that it will meet the requirements of these specifications for new construction. If unsuitable material is discovered in the soils base, it shall be removed and replaced with material conforming to 804.04 and measured and paid for under 209.07.

The concrete adjoining the section to be replaced shall be left with straight edges. Sidewalk replacement shall be extended to the scored joint and/or the existing repair as directed by the Engineer.

All costs of cutting back, removal, and disposal of the excavated material to the depth of pavement which is to be placed shall be included in the contract unit price for Repair of Portland Cement Concrete Pavement Sidewalk or Miscellaneous Repair. Material to be removed above or below the pavement will be paid for at the contract unit price under 202.

(2) **PLACING CONCRETE.** The edges of the concrete adjoining the repair shall be thoroughly cleaned and wetted just prior to depositing fresh concrete against them. Any damaged expansion joint material in the area to be repaired shall be replaced with new material and shall conform in all respects as to type, quality, and method of installation to that of new construction. Sufficient carbon powder shall be used in the repair of sidewalk so that the repaired area will closely match the color of the existing concrete. The cost of furnishing carbon powder for sidewalk repair will be included in the contract unit price per square yard for concrete sidewalk repair.

If sufficient concrete is not available to completely fill the repair section, bulkhead timber of the depth of the repair shall be placed to receive the concrete.

When truck-mixed concrete is used for repair, retempering the concrete and placing of concrete which has attained initial set will not be permitted. The interval between the admission of cement to the batch and final discharge shall not exceed 2 hours.

It is important that all locations at which concrete is to be used are fully prepared prior to delivery of the concrete and that only sufficient concrete is ordered to permit its use within the time limit specified for hauling concrete. Due to the difficulty of placing concrete in irregular and small repairs and the importance of attaining the best possible results, the Contractor shall proceed with the utmost diligence in the prosecution of all phases of work.

(3) CURING. When wet burlap is used for curing, special care should be used to be sure it is thoroughly wet, that it is placed over the concrete surface as soon as the finishing is complete, and that the burlap is kept wet in conformance with these specifications. Where it is not practicable to keep burlap, placed on concrete for curing, continually wet overnight following the placing of the concrete, a membrane cure meeting the requirements of 814.03 shall be applied to the surface as directed by the Engineer. Membrane cure shall not be used during the period classified as Cold Weather Construction.

(4) PROTECTION. All classes of traffic shall be excluded from pavements by the erection and maintenance of suitable barricades for a period of 24 hours after placing the concrete. This curing period will be increased to 48 hours in the case of roadway and alley construction during the period classified as Cold Weather Construction.

The Contractor shall be responsible for the cuts and their condition from the initiation of excavation to the removal, upon approval, or barricades from completed repair.

(5) TREE SAFEGUARDS. Tree safeguards shall conform to the requirements of 609.01(E)(3).

(F) MEASURE AND PAYMENT. The unit of measure for Portland Cement Concrete Sidewalk Repair and for Miscellaneous Construction will be the square yard. The actual number of square yards measured completed in place will be paid for at the contract unit price per square yard, which payment will include the removal and disposal of old material from the defective area, expansion joint material and all labor, materials, tools, equipment, and incidentals necessary to complete the work.

608.03 ASPHALTIC CONCRETE WALK

(A) DESCRIPTION. Asphaltic Concrete Walk shall consist of 2 inches of asphaltic concrete. Class "C", constructed in the areas shown in the contract documents and/or as directed by the Engineer. The pertinent provisions in 403 shall apply except that a 5 ton roller may be used for compaction of the asphalt.

(B) MEASURE AND PAYMENT. The unit of measure for Asphaltic Concrete Walk will be the square yard. The number of square yards will be the actual number complete in place as measured in the field. Payment will be made at the contract unit price per square yard, which payment will include furnishing, hauling and placing asphaltic concrete and all labor, tools, equipment and incidentals necessary to complete the work.

608.04 BRICK AND BLOCK SIDEWALK AND REPAIR

(A) DESCRIPTION. Brick and Block Sidewalk shall be constructed and/or repaired in those areas indicated in the contract documents and/or as directed. The sidewalk shall consist of brick or block in a

mortar bed on PCC base or in a sand-cement bed on soils base as indicated in the contract documents and/or as directed. Joints shall be filled with a sand-cement mix. The exact pattern, brick size, color, and construction details shall be as indicated in the contract documents.

In sidewalk repair, available suitable old brick and block shall be used in addition to any new brick or block required to complete the work. Delivery of brick or block from one site to another will be required and paid on a per each basis.

(B) MATERIALS. Materials shall meet the following requirements:

Portland Cement - 801.01

Masonry Cement - 801.02

Epoxy Mortar - 821.10(C)

Sand - 803.06

Water - 821.01

Brick - 806.01(B)

Pressed Concrete Block - 806.02

Preformed Expansion Joint Material - 807.01(A)

Cold-poured sealant - 807.02(B), natural gray color.

(C) CONSTRUCTION REQUIREMENTS. Premolded expansion joint material (1/2 inch) shall be placed along the back of the curbs and around structures in and abutting the sidewalk. The premolded material shall be removed to 1/2 inch below the sidewalk surface and this space sealed.

(1) BRICK SIDEWALK ON PCC BASE shall meet the following requirements:

(a) Soils Base - New Soils Base, if required, on existing soil, shall be brought to within 3/4 inch of proper grade. Soils base used shall meet the requirements of 804.04.

(b) PCC Base - The PCC Base shall be constructed on soils base, prepared per 209. PCC base shall be per 502. Depth of the PCC base shall be 4 inches. Broom or machine finishing, scoring, carbon powder and joint sealer shall not be required for PCC base.

(c) Mortar Bed - The mortar bed used when placing brick on PCC base shall consist of a mix of two parts by volume of well graded sand with one part by volume of masonry cement, mixed dry until the mass is uniform in color. Mixing may be done in an approved batch mixer or by hand on a clean tight surface. Enough water shall be added to the dry mix to make a comparatively stiff consistency. Mixing time shall be a minimum of 4 minutes. Immediately prior to placing mortar bed, PCC base surface shall be dampened thoroughly.

The mortar bed shall be carefully shaped to a surface approximately parallel with surface of finished brick paving. The area of mortar bed placed and rolled in any workday shall be scheduled so that at the end of the day no bedding course remains without the brick course.

(d) Laying Brick - Upon prepared mortar bed the brick shall be laid in successive courses with the better face or wire-cut side upward.

Every course of brick shall be laid true and even and brought to grade by use of wooden mallets or similar tools, and except in special cases shall be laid parallel to the curb. No course shall deviate from a straight line more than 2 inches in 30 feet. Brick laying shall take place in a continuous sequence and shall

follow the completion of the bedding within 50 feet.

Immediately after laying the brick, brick surfaces shall be swept and inspected. Any imperfect brick, as determined by the Engineer, shall be removed and replaced.

(e) Tamping Brick - Following inspection and replacement of defective bricks, the surface shall be swept free of spalls, covered with a board approximately 3 inches thick, 12 inches wide, and 6 feet long, and shall be tamped with an approved tamper. At no time shall tamper come in direct contact with bricks, and all work shall be done as soon as possible after laying so that tamping may be completed before the bed has begun to set.

(f) Joint Filler - When tamping is completed as described above, joints shall be thoroughly chocked with a dry mix of 2 parts sand and 1 part of cement by volume.

Filler shall be brought up flush with the surface of the bricks. After filling, the bricks shall be swept clean and carefully watered to saturate the joint filler, care being exercised not to displace filler from the joints. Any joints which do not remain flush with brick surfaces shall be re- chocked and watered. Particular attention shall be paid to soldier courses and those small sections of cut brick necessary to fit manholes, light poles, and obstructions within the paved area. Where directed by the Engineer, these shall be completely embedded in the 2:1 mix to prevent them from working loose.

(g) Tree Safeguards - Pertinent provision of 609.01(E)(3) are applicable to this item of work.

(2) BRICK SIDEWALK ON SAND-CEMENT BED. Requirements of 608.04(C)(1) apply except as follows:

(a) Construction of PCC base shall not be required for this work.

(b) Sand-cement bedding course and joint filler shall consist of sand and portland cement in the proportion of 1 part cement and 4 parts sand by weight mixed dry until the mass is of uniform color. Mixing may be done in an approved batch mixer or by hand on a clean tight surface.

The bedding course shall be placed and shaped upon the prepared soils base so that its finished depth shall be not less than 4 inches. The bedding shall be shaped to a true surface, parallel with the surface of the finished paving, by means of a template, and the bed shall be struck off until proper alignment is secured. The area of bedding course placed and rolled in any workday shall be scheduled so that no bedding course remains at end of day without the brick course.

If directed by the Engineer, in addition to shaping with a template, the bedding course shall be compacted with a hand roller. The bedding course shall be alternately struck off and rolled until uniform alignment is secured. The roller shall be not less than 36 inches in diameter and 24 inches in width, and shall weigh not less than 10 pounds per inch of width.

After final shaping, the bedding shall not be disturbed prior to laying the brick.

(3) BLOCK SIDEWALK ON PCC BASE or ON SAND/CEMENT BED. Requirements of paragraphs (1) and (2) above apply except as specified hereunder:

(a) Sample - Before work is begun, the Contractor shall submit a sample to the Bureau of Transportation Construction Services, Department of Public Works for approval.

(b) Mock-Up - The Contractor shall provide an in- place job mock-up of block paving work. Mock-up shall be representative of finished work in all respects, including poured concrete collars, joint

fillers and sealants. Mock-up shall be used as a standard of acceptability for materials and workmanship. Accepted mock-ups will be allowed to remain as part of the completed work. Mock-up size shall be at least 10.5 feet by 10.0 feet.

(c) Sand-Cement Bed - Bedding course shall consist of 1 part cement and 2 parts sand, by volume, mixed dry until the mass is of uniform color. Mixing may be done in an approved batch mixer or by hand on a clean, tight surface. Once thoroughly mixed, the mass shall be lightly moistened with water.

(d) Laying Paving Block - Upon the bedding course as prepared, the pressed concrete pavers shall be laid with 1/4 inch joints, in successive, straight courses, starting perpendicular to the curb, with the better face, or non-slip finish up, and working toward the building line.

The surface edge of one paver shall be level with the next adjacent pavers so that no voids, rocking motions, or tripping hazards are encountered. Edge to edge arris shall not exceed 1/16 inch.

Unless otherwise specified in the contract documents or as directed, paving block shall be laid in a trisected running bond. Herringbone pattern shall be laid at corners.

After placement of paving block, the surface shall be covered by a board approximately 3 inches thick, 12 inches wide, and 6 feet long and shall be rolled with an approved roller. At no time shall roller come in direct contact with paving block. All work shall be done as quickly as possible after laying.

The roller shall not be less than 36 inches in diameter and 24 inches in width, and shall weigh not less than 10 pounds per inch of width.

Before the pressed concrete paving blocks are installed in place, the backs of the blocks shall be moistened with water. Blocks shall be cut to fit around catch basins, wheelchair ramps, and around light standard bases. Where cutting is required, it shall be done with a high speed masonry saw producing clean, sharp edges.

At the option of the Engineer, square poured concrete collars of like color and treatment similar to the pressed concrete paving blocks shall be constructed around flagpole bases, manholes, and other small sidewalk interruptions.

For use in poured concrete areas, the Contractor shall procure from the paver supplier, bags of the same sand, cement and aggregates used in the manufacture of the pressed concrete paving blocks. The poured concrete shall be scored to match the adjacent paver pattern.

Where irregularities of line and grade exist at the building line, a shoreline of smaller blocks, poured concrete, or other treatment may be acceptable, upon approval by the Engineer. In no case will blocks less than 6 inches in length be used which can be easily dislodged.

Where indicated in the contract documents, the old removable-type steel vault covers will be removed and new pan vault covers furnished and installed by the respective utility company. On the new pan covers, the Contractor shall inlay pressed concrete paving block on an epoxy mortar bed. Level of blocks shall be flush with surrounding grade. Joints shall match that of the adjacent block sidewalk as much as practicable. Small blocks, less than 6 inches in length, will be allowed for use only in the paving of vault covers.

Where building vaults are encountered below grade, the pressed concrete block pavers shall be laid on sand-cement leveling bed installed in two lifts. The first lift shall be laid and compacted as a leveling course. The second lift shall be 3/4 inch depth and treated as a setting bed for pressed concrete block pavers.

Expansion joint material, 1/2 inch wide, shall extend from the vertical face to the underground vaults up through the sand-cement beds to within approximately 1/2 inch of the surface of the Pressed Concrete Block paving. Joint shall then be sealed with sealant.

The utility company shall be notified at least 3 weeks in advance before paving work on the vault covers is scheduled to begin.

(e) Joints - Joints shall be 1/4 inch maximum between paving blocks. Edges of blocks shall be beveled to 3/16 inch maximum. Combined width across bevelled joint shall be 5/8 inch maximum.

Immediately after installation of the paving block, the joints shall be filled, to bottom of bevel with joint filler. Any unsuitable blocks, so determined by the Engineer, shall be removed and replaced. Joints shall be thoroughly watered with a fine spray after filler is worked into the joints.

(f) Tree Safeguards - Pertinent provision of 609.01(E)(3) are applicable to this item of work.

(D) MEASURE AND PAYMENT. The unit of measure for the following items is the square yard. The number will be the actual number of square yards measured complete in place:

Brick/Block Sidewalk on PCC Base.

Brick/Block Sidewalk Repair on PCC Base.

Brick/Block Sidewalk on Sand-Cement Bed.

Brick/Block Sidewalk Repair on Sand-Cement Bed.

Payment for the various items of sidewalk and sidewalk repair will be made at the respective contract unit price per square yard, which payment will include compaction of existing soils base, furnishing and placing all materials including brick or block for new construction, PCC and mortar bed and filler or sand-cement bed and filler, preformed expansion joint material and joint sealer, epoxy mortar, water and all labor, tools, equipment and incidentals necessary to complete the work.

Payment for sidewalk repair shall also include removal and disposal of all unsuitable material and resetting existing brick or block. Any new bricks or blocks needed will be paid for on a per each basis.